Curriculum Content Framework

HVACR I

Grade Level: 11	Prerequisites: None
CIP Code: 47.0201	Course Code: 47.232

Course Description: An instructional program that prepares individuals to apply technical knowledge and skills to repair, install, service and maintain the operating condition of heating, air conditioning, and refrigeration systems.

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Unit 1: Safety and Environment

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
1.1 (define) Terms related to HVACR		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]
1.2 (explain) Basic components of HVACR	1.2.1 Identify different HVACR components	Foundation	Science	Acquires and processes scientific data [1.4.1] Applies scientific principles related to HVACR [1.4.5] Describes/Explains scientific principles related to HVACR [1.4.14]
1.3 (identify) Career opportunities in the HVACR trade	1.3.1 Classify careers into the appropriate area relating to HVACR: Community Based, Commercial/Industrial and Manufacturing	Personal Management	Career Awareness/ Development/ Mobility	Comprehends ideas and concepts related to classification of HVACR careers [3.1.3] Develops skills to locate, evaluate, and interpret career information [3.1.4]
1.4 (explain) Purpose of an apprenticeship training program		Personal Management	Career Awareness/ Development/ Mobility	Comprehends ideas and concepts related to purpose of an apprenticeship training program [3.1.3]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
1.5 (cite) Specific characteristics of a HVACR apprenticeship program		Personal Management Thinking	Career Awareness/ Development/ Mobility Knowing How To Learn	Identifies education and training needed to achieve goals [3.1.8] Applies new knowledge and skills to cite specific characteristics of a HVACR apprenticeship paragraph [4.3.1]
1.6 (identify) Federal, state and local governing agency regulations related to HVACR (ie. EPA, DOT, OSHA)		Foundation Personal Management	Reading Organizational Effectiveness	Comprehends written information and concepts derived from printed materials [1.3.8] Comprehends the organization's mode of operation [3.3.5]
1.7 (explain) The Clean Air Act and how it affects HVACR		Personal Management	Integrity/Honesty/ Work Ethic	Follows established rules, regulations and policies [3.2.5]

Unit 2: HVACR Mathematics

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
2.1 (define) Terms related to mathematical calculations used in HVACR		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]
2.2 (explain) Use of basic mathematical calculations in HVACR	2.2.1 Choose appropriate mathematical technique to solve math problems in HVACR	Foundation	Arithmetic/ Mathematics	Applies mathematical principle related to use of mathematical calculations in HVACR [1.1.4] Chooses appropriately from a variety of mathematical techniques [1.1.11]
	2.2.2 Solve math problems in HVACR	Foundation	Arithmetic/ Mathematics	Applies addition, subtraction, multiplication and division to real-world situations [1.1.1]
2.3 (state) Algebraic equations related to HVACR		Foundation	Reading	Uses basic algebraic symbols, terms and formulas [1.1.33]
2.4 (explain) Use of algebraic equations in HVACR	2.4.1 Solve basic algebraic equations related to HVACR	Foundation	Arithmetic/ Mathematics	Computes using a formula [1.1.14] Expresses mathematical ideas and concepts orally and in writing [1.1.23]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
2.5 (state) How to calculate measurements related to HVACR (eg. volume, weight, pressure, vacuum and temperature)	2.5.1 Calculate different types of measurements related to HVACR (eg. volume, weight, pressure, vacuum and temperature)	Foundation	Arithmetic/ Mathematics	Computes using a formula [1.1.14] Expresses mathematical ideas and concepts orally and in writing [1.1.23]
2.6 (define) Geometric terms related to HVACR	2.6.1 Construct simple geometric figures related to HVACR	Foundation	Arithmetic/ Mathematics Reading	Constructs geometric figures [1.1.15] Applies/Understands technical words that pertain to subject [1.3.6]
2.7 (cite) Applications for the use of geometry in HVACR	2.7.2 Solve basic geometry problems related to HVACR	Foundation	Arithmetic/ Mathematics	Constructs geometric figures [1.1.15] Expresses mathematical ideas and concepts orally and in writing [1.1.23]

Unit 3: Tools of the Trade: Use and Safety

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
3.1 (identify) Hand tools used in HVACR		Thinking	Knowing How To Learn	Applies new knowledge and skills to identify tools used in HVACR [4.3.1]
			Reasoning	Sees relationship between two or more ideas, objects or situations [4.5.5]
3.2 (state) Safety precautions in the use of hand tools for HVACR	3.2.1 Use hand tools correctly demonstrating safety precautions	Foundation	Reading	Reads and follows instructions to operate technical equipment [1.3.19]
			Science	Follows safety guidelines [1.4.16]
				Uses equipment and techniques to demonstrate correct safety precautions with hand tools [1.4.24]
			Speaking	Communicates a thought, idea or fact in spoken form [1.5.5]
		Personal Management	Integrity/Honesty/ Work Ethic	Complies with safety and health rules in a given work environment [3.2.2]
3.3 (identify) Power tools used in HVACR		Thinking	Reasoning	Sees relationship between two or more ideas, objects or situations [4.5.5]
		Thinking	Knowing How To Learn	Applies new knowledge and skills to identify power tools used in HVACR [4.3.1]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
3.4 (state) Safety precautions in the use of power tools for HVACR	3.4.1 Use power tools correctly demonstrating safety precautions	Foundation	Reading	Reads and follows instructions to operate technical equipment [1.3.19]
			Science	Follows safety guidelines [1.4.16]
				Uses equipment and techniques to demonstrate correct safety precautions with power tools [1.4.24]
			Speaking	Communicates a thought, idea or fact in spoken form [1.5.5]
		Personal Management	Integrity/Honesty/ Work Ethic	Complies with safety and health rules in a given work environment [3.2.2]
3.5 (explain) Procedures for proper maintenance of hand tools used in HVACR		Foundation	Writing	Communicates thoughts, ideas or facts in written form in a clear, concise manner [1.6.6]
		Personal Management	Integrity/Honesty/ Work Ethics	Describes desirable worker characteristics [3.2.3]
			Responsibility	Pays close attention to detail [3.4.8]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
3.6 (explain) Procedures for proper maintenance of power tools used in HVACR		Foundation	Writing	Communicates thoughts, ideas or facts in written form in a clear, concise manner [1.6.6]
		Personal Management	Integrity/Honesty/ Work Ethic	Describes desirable worker characteristics [3.2.3]
			Responsibility	Pays close attention to detail [3.4.8]

Unit 4: Introduction to Blueprint Reading

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
4.1 (define) Terms related to blueprints		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]
4.2 (identify) Blueprint symbols		Foundation	Reading	Identifies relevant details, facts and specifications [1.3.16]
4.3 (explain) Symbols used on blueprints	4.3.1 Match blueprint symbols to blueprint	Foundation	Arithmetic/ Mathematics Reading	Interprets charts, tables, graphs and working drawings [1.1.25] Applies information and concepts derived from printed material [1.3.3]
4.4 (list) Line types used in blueprints		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]
4.5 (explain) Different uses of line types	4.5.1 Match line types on blueprints	Foundation	Writing	Applies and uses technical words and concepts [1.6.4] Uses technical words and symbols [1.6.20]
4.6 (list) Different types of plans found on a blueprint		Foundation	Reading	Interprets drawing to obtain factual information [1.3.17]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
4.7 (explain) Different types of plans found on a blueprint	4.7.1 Choose types of plans represented on a series of blueprint plans	Foundation Thinking	Writing Seeing Things in The Mind's Eye	Analyzes data, summarizes results and makes conclusions [1.6.2] Organizes and processes images--symbols, pictures, graphs, objects [4.6.2]
4.8 (list) Five components of a blueprint		Thinking	Knowing How To Learn	Applies new knowledge and skills to list components of a blueprint [4.3.1]
4.9 (explain) Contents of the five components of a blueprint	4.9.1 Label components of a blueprint	Foundation Thinking	Writing Knowing How To Learn	Uses technical words and symbols [1.6.20] Processes new information as related to workplace [4.3.5]
4.10 (list) Measuring tools for a blueprint		Foundation	Arithmetic/ Mathematics	Applies mathematical principles related to identifying measuring scales of a blueprint [1.1.4]
4.11 (identify) The measuring scales of a blueprint	4.11.1 Differentiate type of scales by needs of blueprint	Foundation	Arithmetic/ Mathematics	Chooses appropriately from a variety of mathematical techniques [1.1.11] Expresses mathematical ideas and concepts orally and in writing [1.1.23]
4.12 (list) Rules for care of a blueprint		Personal Management	Responsibility	Comprehends ideas and concepts related to rules for care of a blueprint [3.4.2]

Unit 5: Piping Principles and Practices

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
5.1 (define) Terms related to piping practices in HVACR		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]
5.2 (list) Various types of metal pipes (eg. steel, galvanized black iron, aluminum, stainless steel and copper		Thinking	Decision Making	Comprehends ideas and concepts related to various types of metal pipes [4.2.2]
5.3 (list) Types of plastic pipes (eg. PVC, ABS, PE and CPVC)		Thinking	Decision Making	Comprehends ideas and concepts related to various types of plastic pipes [4.2.2]
5.4 (list) Factors determining type of pipe used in different applications	5.4.1 Select appropriate pipe for various HVACR applications	Foundation Thinking	Reading Knowing How To Learn Reasoning	Uses appropriate materials and techniques as specified [1.3.20] Applies new knowledge and skills to select appropriate pipe for HVACR applications [4.3.1] Applies new rules and principles to a new situation [4.5.1]
5.5 (identify) Common fittings for HVACR piping (eg. elbow, tees, union, transition)		Thinking	Problem Solving	Comprehends ideas and concepts related to common fittings for HVACR piping [4.4.1]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
5.6 (state) Procedures for connecting pipe fittings to pipe	5.6.1 Connect pipe fittings to pipe using correct procedures	Foundation	Writing	Communicates thoughts, ideas or facts in written form in a clear, concise manner [1.6.6]
		Thinking	Decision making	Comprehends ideas and concepts related to connecting pipe fittings to pipe [4.2.2]
			Knowing How To Learn	Applies new knowledge and skills to connect pipe fittings to pipe using correct procedure [4.3.1]
	5.6.2 Differentiate pipe fittings for appropriate application/use	Thinking	Decision Making	Demonstrates decision-making skills [4.2.4] Evaluates information/data to make best decision [4.2.5]
5.7 (list) Types of HVACR hangers and supports		Thinking	Knowing How To Learn	Applies new knowledge and skills to list types of HVACR hangers and supports [4.3.1]
5.8 (explain) Principal purpose of hangers and support		Thinking	Reasoning	Applies new rules and principles to a new situation [4.5.1]
5.9 (state) Safety precautions that must be taken when installing HVACR piping		Problem Solving	Organizational Effectiveness	Identifies characteristics desired by organization [3.3.6]
		Thinking	Reasoning	Applies new rules and principles to a new situation [4.5.1]

Unit 6: Soldering and Brazing

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
6.1 (define) Terms related to soldering and brazing		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]
6.2 (state) Safety precautions necessary for soldering/brazing	6.2.1 Demonstrate ability to follow safety precautions in preparing for soldering/brazing	Personal Management	Integrity/Honesty/ Work Ethic	Complies with safety and health rules in a given work environment [3.2.2]
				Follows established rules, regulations and policies [3.2.5]
			Organizational Effectiveness	Identifies characteristics desired by organization [3.3.6]
		Thinking	Reasoning	Applies rules and principles to a new situation [4.5.1]
6.3 (list) Use for soldered or brazed joints		Thinking	Knowing How To Learn	Applies new knowledge and skills to list use for soldered or brazed joints [4.3.1]
6.4 (explain) Components used to prepare solder or brazed joints		Foundation	Reading	Comprehends written information and applies it to a task [1.3.8]
6.5 (explain) Procedure used in soldering/brazing	6.5.1 Follow procedure for preparing for soldering/brazing	Personal Management	Organizational Effectiveness	Applies knowledge to implement work related system or practice [3.3.4]
		Thinking	Knowing How To Learn	Applies new knowledge and skills to explain procedure used in preparing for soldering/brazing [4.3.1]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
	6.5.2 Make a soldered joint	Foundation	Science	Uses equipment and technology to make a soldered joint [1.4.24]
	6.5.3 Make a brazed joint	Foundation	Science	Uses equipment and technology to make a brazed joint [1.4.24]
6.6 (identify) Inert gases that can be used to purge tubing when brazing		Foundation	Science	Applies knowledge to complete a practical task [1.4.3]

Unit 7: Electric Principles and Practices

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
7.1 (define) Terms related to basic electricity in HVACR		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]
7.2 (state) Safety precautions for use of basic electricity	7.2.1 Demonstrate safety procedures in using electricity	Foundation	Science	Follows safety guidelines [1.4.16] Uses equipment and techniques to demonstrate safety procedures used in basic electricity [1.4.24]
			Speaking	Communicates a thought, idea or fact in spoken form [1.5.5]
		Personal Management	Integrity/Honesty/ Work Ethic	Complies with safety and health rules in a given work environment [3.2.2]
7.3 (describe) Electricity		Foundation	Science	Describes/Explains scientific principles related to electricity [1.4.14]
7.4 (state) Uses of electricity in HVACR		Foundation	Science	Applies scientific principles related to electricity to explain uses in HVACR [1.4.5]
7.5 (state) How electrical power is generated and distributed		Foundation	Science	Describes/Explains scientific principles related to generation and distribution of electricity [1.4.14]
7.6 (describe) How voltage, current, resistance and power are related		Foundation	Science	Describes/Explains scientific principles related to voltage, current, resistance and power [1.4.14]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
7.7 (state) Ohm's Law	7.7.1 Calculate current voltage and resistance in a circuit using Ohm's Law	Foundation Thinking	Arithmetic/ Mathematics Reasoning	Calculates/Estimates current voltage and resistance in a circuit using Ohm's Law [1.1.8] Extracts rules or principles from written information [4.5.4]
7.8 (explain) Direct current		Foundation	Science	Describes/Explains scientific principles related to direct current [1.4.14]
7.9 (explain) Alternating current	7.9.1 Describe the difference between direct and alternating current	Foundation Thinking	Science Problem Solving	Describes/Explains scientific principles related to alternating current [1.4.14] Comprehends ideas and concepts related to describing the differences between direct and alternating current [4.4.1]
7.10 (state) Power formula	7.10.1 Calculate the amount of power consumed in a circuit	Foundation	Arithmetic/ Mathematics	Applies mathematical formula to solve a problem [1.1.3] Computes using a formula [1.1.14] Expresses mathematical ideas and concepts orally and in writing [1.1.23]
7.11 (explain) The components of a series circuit	7.11.1 Draw a series circuit	Foundation Thinking	Science Creative Thinking	Describes/Explains scientific principle related to a series circuit [1.4.14] Creates new design by applying specified criteria [4.1.3]

Unit 8: Electric Motors

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	Description
8.1 (define) Terms related to electric motors utilized in HVACR		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]
8.2 (explain) Operating principles of electric motors		Foundation	Science	Acquires and processes scientific data [1.4.1] Applies scientific principles related to electric motors [1.4.5] Describes/Explains scientific principles related to electric motors [1.4.14]
8.3 (identify) Parts of electric motors (ie. capacitors, rotor, bearing, stator, motor protection devices)	8.3.1 Label parts	Thinking	Knowing How To Learn	Applies new knowledge and skills to identify parts of electric motors [4.3.1] Processes new information as related to workplace [4.3.5]
8.4 (explain) Function of part of electric motors	8.4.1 Match function to part	Foundation Thinking	Writing Decision Making Knowing How To Learn	Uses technical words and symbols [1.6.20] Evaluates information/data to make best decision [4.2.5] Processes new information as related to workplace [4.3.5]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	Description
8.5 (list) Types of motors utilized in HVACR		Foundation Thinking	Writing Knowing How To Learn	Communicates thought, ideas, or facts in written form in a clear, concise manner [1.6.6] Applies new knowledge and skills to list types of motors utilized in HVACR [4.3.1]
8.6 (explain) Application of motor	8.6.1 Match application to motor	Foundation	Science	Acquires and processes scientific data [1.4.1] Applies scientific principles related to electric motors [1.4.5] Describes/Explains scientific principles related to electric motors [1.4.14]
8.7 (list) Steps in procedure of installing electric motors		Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2]
8.8 (explain) Procedure for installing an electric motor	8.8.1 Install and connect electric motor	Foundation Thinking	Science Speaking Reasoning	Uses equipment and techniques to install and connect electric motor [1.4.24] Communicates a thought, idea or fact in spoken form [1.5.5] Comprehends ideas and concepts related to explaining procedure for installing an electric motor [4.5.2]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	Description
8.9 (list) Maintenance procedures of electric motors		Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2]
8.10 (explain) Procedure for maintenance of electric motors	8.10.1 Perform maintenance procedures	Foundation	Science	Uses equipment and techniques to perform maintenance procedures [1.4.24]
			Speaking	Communicates a thought, idea or fact in spoken form [1.5.5]
		Thinking	Reasoning	Comprehends ideas and concepts related to explaining procedure for maintenance of electric motor [4.5.2]
8.11 (list) Problems causing electric motor failure		Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2] Identifies possible reasons for problem [4.4.6]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	Description
8.12 (identify) Problems causing electric motor failure	8.12.1 Troubleshoot an electric motor	Foundation	Science	Applies knowledge to complete a practical task [1.4.3] Uses equipment and techniques to troubleshoot an electric motor [1.4.24]
		Thinking	Problem Solving	Comprehends ideas and concepts related to identifying problems causing electric motor failure [4.4.1] Draws conclusions from observations, evaluates conditions, and gives possible solutions [4.4.5] Identifies possible reasons for problem [4.4.6]

Unit 9: Controls

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
9.1 (define) Terms related to controls utilized in HVACR		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
9.2 (state) Safety precautions for use of controls in HVACR		Foundation Thinking	Speaking Knowing How To Learn	Communicates a thought, idea, or fact in spoken form [1.5.5] Applies new knowledge and skills to state safety precautions for use of controls in HVACR [4.3.1]
9.3 (explain) Safety precautions for use of controls in HVACR		Foundation Thinking	Speaking Reasoning	Communicates a thought, idea, or fact in spoken form [1.5.5] Comprehends ideas and concepts related to explaining safety precautions for use of controls in HVACR [4.5.2]
9.4 (list) Major types of control devices (ie. mechanical, electronic, electromechanical)		Thinking	Knowing How To Learn	Applies new knowledge and skills to list major types of control devices [4.3.1]
9.5 (identify) Electromechanical control devices		Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2]
9.6 (explain) Electromechanical control devices	9.6.1 Install an electromechanical device	Foundation Thinking	Science Speaking Problem Solving	Uses equipment and techniques to install an electromechanical device [1.4.24] Communicates a thought, idea, or fact in spoken form [1.5.5] Demonstrates logical reasoning in reaching a conclusion [4.4.2]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
	9.6.2 Troubleshoot an electromechanical device	Foundation	Science	Uses equipment and techniques to troubleshoot an electromechanical device [1.4.24]
		Thinking	Decision Making	Evaluates information/data to make best decision [4.2.5]

Unit 10: Refrigeration and Air Conditioning Principles and Practices

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
10.1 (match) Terms related to cooling systems with correct definitions		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]
10.2 (explain) Refrigeration as a basic fundamental of cooling		Foundation	Science	Describes/Explains scientific principles related to refrigeration as a fundamental of cooling [1.4.14]
10.3 (list) Basic measurement of heat content CBTU	10.3.1 Calculate BTU's as related to HVACR	Foundation	Arithmetic/ Mathematics	Chooses appropriately from mathematic techniques [1.1.11] Computes formula [1.1.14]
10.4 (state) The formula for calculating BTU's		Foundation	Arithmetic/ Mathematics	Expresses mathematical ideas and concepts orally and in writing [1.1.23]
10.5 (explain) Concepts of heat (eg. sensible, latent, total and super)		Foundation	Science	Describes/Explains scientific principles related to the concepts of heat [1.4.14]
10.6 (list) Three ways to transfer heat		Thinking	Knowing How To Learn	Applies new knowledge and skills to list ways to transfer heat [4.3.1]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
10.7 (explain) Types of heat transfer (eg. convection, conduction, radiation)		Foundation	Science	Describes/Explains scientific principles related to types of heat transfer [1.4.14]
10.8 (distinguish) Types of heat transfer and their use		Foundation	Science	Chooses appropriately from a variety of scientific methods and techniques to complete a task [1.4.9]
10.9 (list) Basic mechanical components of a cooling system: compressor, evaporator, condenser and coolant control		Thinking	Reasoning	Comprehends ideas and concepts related to basic mechanical components of a cooling system [4.5.2]
10.10 (explain) The function of basic components of a cooling system	10.10.1 Label the basic components of a cooling system	Thinking	Knowing How To Learn Seeing Things In The Mind's Eye	Applies new knowledge and skills to label basic components of a cooling system [4.3.1] Visualizes a system's operation from schematics [4.6.3]
10.11 (explain) The refrigeration cycle		Foundation	Science	Applies scientific principles related to the refrigeration cycle [1.4.5]
10.12 (explain) How to measure temperatures of condensers and evaporators	10.12.1 Measure temperatures of condensers and evaporators	Foundation	Arithmetic/ Mathematics	Expresses mathematical ideas and concepts orally and in writing [1.1.23] Uses common measuring devices/tools to measure temperature of condensers and evaporators [1.1.37]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
10.13 (list) The basic refrigerants	10.13.1 Differentiate the basic refrigerants	Thinking	Reasoning	Comprehends ideas and concepts related to basic refrigerants [4.5.2] Uses logic to draw conclusions from available information [4.5.6]
10.14 (list) Environmental considerations for producing new generation refrigerants		Personal Management	Organizational Effectiveness	Applies knowledge to implement work-related system or practice [3.3.4]
10.15 (list) Safety precautions for refrigerants		Personal Management	Integrity/Honesty/ Work Ethic	Complies with safety and health rules in a given work environment [3.2.2]
10.16 (list) Different types of compressors		Thinking	Knowing How To Learn	Applies new knowledge and skills to list different types of compressors [4.3.1]
10.17 (explain) Different uses for types of compressors		Thinking	Problem Solving	Comprehends ideas and concepts related to uses for types of compressors [4.4.1]
10.18 (list) Types of condensers (air-cooled, water-cooled, evaporative)		Thinking	Knowing How To Learn	Applies new knowledge and skills to list types of condensers [4.3.1]
10.19 (explain) Different uses for various types of condensers		Thinking	Problem Solving	Comprehends ideas and concepts related to uses for types of condensers [4.4.1]
10.20 (list) Types of evaporators		Thinking	Knowing How To Learn	Applies new knowledge and skills to list types of evaporators [4.3.1]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
10.21 (explain) Different uses for various types of evaporators		Thinking	Problem Solving	Comprehends ideas and concepts related to uses for types of evaporators [4.4.1]
10.22 (list) Types of metering devices		Thinking	Knowing How To Learn	Applies new knowledge and skills to list types of metering devices [4.3.1]
10.23 (explain) Different uses for types of metering devices		Thinking	Problem Solving	Comprehends ideas and concepts related to different uses of metering devices [4.4.1]
10.24 (list) Additional components of the basic refrigeration system	10.24.1 Label components of basic refrigeration system	Foundation Thinking	Reading Knowing How To Learn	Locates pertinent information in documents such as manuals, graphs and schedules to perform tasks [1.3.18] Applies new knowledge and skills to list additional components of the refrigeration cycle [4.3.1]
10.25 (select) Proper components and materials to construct a refrigeration system		Thinking	Decision Making Knowing How To Learn	Demonstrates decision-making skills [4.2.4] Applies new knowledge and skills to select proper components and materials to construct a refrigeration system [4.3.1]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
10.26 (explain) Selection of materials and components for a refrigeration system	10.26.1 Construct a refrigeration system	Foundation	Science	Uses equipment and techniques to construct a refrigeration system [1.4.24]
			Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Thinking	Decision Making	Evaluates information/data to make best decision [4.2.5]
10.27 (review) Procedures for leak test related to refrigeration systems		Thinking	Reasoning	Comprehends ideas and concepts related to reviewing procedures for leak test related to refrigeration systems [4.5.2]
10.28 (review) EPA regulations as refers to evacuation		Thinking	Reasoning	Comprehends ideas and concepts related to reviewing EPA regulations as refers to evacuation [4.5.2]
10.29 (cite) Reasons for performing evacuation		Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Thinking	Reasoning	Comprehends ideas and concepts related to citing reasons for performing evacuation [4.5.2]
10.30 (list) Steps in performing evacuation of a refrigeration system		Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2] Devises and implements a plan of action to resolve problem [4.4.3]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
10.31 (explain) Steps in performing evacuation of a refrigeration system	10.31.1 Perform evacuation of a refrigeration system	Foundation	Science	Uses equipment and techniques to perform evacuation of a refrigeration system [1.4.24]
			Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Thinking	Decision Making	Evaluates information/data to make best decision [4.2.5]
10.32 (list) Procedures for installing refrigerant in refrigeration system		Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2]
10.33 (explain) Procedures for installing refrigerant in refrigeration system	10.33.1 Install refrigerant in refrigeration system	Foundation	Science	Uses equipment and techniques to install refrigerant in refrigeration system [1.4.24]
			Speaking	Communicates a thought, idea or fact in spoken form [1.5.5]
		Thinking	Reasoning	Comprehends ideas and concepts related to explaining procedure for installing refrigerant in refrigeration system [4.5.2]
10.34 (list) Procedures for troubleshooting		Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
10.35 (explain) Procedures for troubleshooting	10.35.1 Perform troubleshooting on a refrigeration system	Foundation	Science	Uses equipment and techniques to perform troubleshooting on a refrigeration system [1.4.24]
			Speaking	Communicates a thought, idea or fact in spoken form [1.5.5]
		Thinking	Reasoning	Comprehends ideas and concepts related to explaining procedure for installing an electric motor [4.5.2]
10.36 (list) Types of procedures for recovering/recycling refrigerant		Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2]
10.37 (explain) Types of procedures for recovering/recycling refrigerant	10.37.1 Recover refrigerant	Foundation	Science	Uses equipment and techniques to recover refrigerants [1.4.24]
			Speaking	Communicates a thought, idea or fact in spoken form [1.5.5]
		Thinking	Reasoning	Comprehends ideas and concepts related to explaining procedure for recovering/recycling refrigerants [4.5.2]
10.38 (list) Primary controls of the refrigeration cycle		Thinking	Knowing How To Learn	Applies new knowledge and skills to list primary controls of the refrigeration cycle [4.3.1]
10.39 (explain) Uses of primary controls of the refrigeration cycle		Thinking	Problem Solving	Comprehends ideas and concepts related to different uses of primary controls of its refrigeration cycle [4.4.1]

Unit 11: Heating Principles and Practices

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
11.1 (match) Terms related to heating systems with correct definitions		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]
11.2 (review) Methods of heat transfer		Foundation	Science	Describes/Explains scientific principle related to heat transfer [1.4.14]
11.3 (list) Examples of heat transfer		Thinking	Knowing How To Learn	Applies knowledge and skills to list examples of heat transfer [4.3.1]
11.4 (explain) Combustion as it relates to HVACR		Foundation	Science	Describes/Explains scientific principle related to combustion [1.4.14]
11.5 (list) By-products of combustion		Foundation	Science	Acquires and processes scientific data [1.4.1]
11.6 (list) Three forms of fuels used in HVACR	11.6.1 Classify heating fuels into basic three forms	Thinking	Knowing How To Learn Reasoning	Applies new knowledge and skills to classify fuels into basic forms [4.3.1] Comprehends ideas and concepts related to types of fuels used in HVACR [4.5.2]
11.7 (list) Advantages/disadvantages of types of heating fuels		Foundation	Reading	Applies information to new situation [1.3.5]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
11.8 (explain) Advantages/disadvantages of types of heating fuels	11.8.1 Classify fuels by efficiency	Foundation Thinking	Reading Reasoning	Comprehends written information and applies it to a task [1.3.8] Comprehends ideas and concepts related to classification of fuels by efficiency [4.5.2]
11.9 (list) Major types of furnaces		Thinking	Knowing How To Learn	Processes new information as related to workplace [4.3.5]
11.10 (explain) Differences in major types of furnaces		Thinking	Reasoning	Sees relationship between two or more ideas, objects or situations [4.5.5]
11.11 (list) Types of forced-air furnaces (eg. horizontal, low-boy, downflow, upflow)		Thinking	Knowing How To Learn	Applies new knowledge and skills to list types of forced-air furnaces [4.3.1]
11.12 (explain) Major differences in types of forced-air furnaces		Thinking	Reasoning	Sees relationship between two or more ideas, objects or situations [4.5.5]
11.13 (list) Major components of heating systems	11.13.1 Label type of furnace and basic components on a given drawing	Thinking	Knowing How To Learn Problem Solving	Applies new knowledge and skills to list major components of heating [4.3.1] Comprehends ideas and concepts related to labeling basic components and types of furnaces [4.4.1]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
11.14 (state) Uses of major components of heating systems		Thinking	Reasoning	Sees relationship between two or more ideas, objects or situations [4.5.5]
11.15 (list) Types of heat exchanges		Thinking	Knowing How To Learn	Processes new information as related to workplace [4.3.5]
11.16 (explain) Purpose of fan and blower s a component of heating		Thinking	Reasoning	Sees relationship between two or more ideas, objects or situations [4.5.5]
11.17 (list) Purpose of air filters		Thinking	Reasoning	Sees relationship between two or more ideas, objects or situations [4.5.5]
11.18 (list) Types of air filters		Thinking	Knowing How To Learn	Processes new information as related to workplace [4.3.5]
11.19 (list) Types of humidifiers		Thinking	Knowing How To Learn	Processes new information as related to workplace [4.3.5]
11.20 (explain) Purpose/use of humidifier	11.20.1 Classify humidifiers by purpose	Thinking	Knowing How To Learn Problem Solving	Applies new knowledge and skills to classify humidifiers by purpose [4.3.1] Comprehends ideas and concepts related to humidifiers [4.4.1]
11.21 (list) Safety precautions related to heating	11.21.1 Discuss necessity of safety precautions in heating furnaces	Foundation	Science	Describes/Explains scientific principles related to safety precautions necessary in heating furnaces [1.4.14] Records data related to safety precautions in heating [1.4.22]

Unit 12: Customer Relations - Ethics, Environment and Problem Solving

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
12.1 (match) Terms relative to HVACR customer relations with their definitions		Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]
12.2 (list) Ways good personal habits contribute to good customer relations	12.2.1 Compare correlation of good personal habits to good customer relations	Interpersonal Personal Management	Customer Service Integrity/Honesty/ Work Ethic	Comprehends ideas and concepts related to ways personal habits contribute to good customer relations [2.3.2] Describe desirable worker characteristics [3.2.3]
12.3 (state) General rules in dealing with customers	12.3.1 Select true statements concerning basic rules for service calls	Interpersonal	Customer Service	Comprehends ideas and concepts related to ways personal habits contribute to good customer relations [2.3.2] Applies human relations skills in real-life situations [2.3.1]
12.4 (state) Basic rules for service calls	12.4.1 Select true statements concerning basic rules for service calls	Interpersonal	Customer Service	Comprehends ideas and concepts related to ways personal habits contribute to good customer relations [2.3.2] Applies human relations skills in real-life situations [2.3.1]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
12.5 (name) Ways to turn service calls into good customer relations opportunities	12.5.1 Complete statements concerning ways to turn service calls into good customer relations opportunities	Interpersonal	Customer Service	Comprehends ideas and concepts related to ways personal habits contribute to good customer relations [2.3.2] Establishes positive first impressions with customers [2.3.4]
12.6 (state) Ways to handle an irritated customer		Interpersonal	Customer Service	Maintain positive relations with customer [2.3.6]
12.7 (cite) Ways vehicle operations affect customer relations	12.7.1 Solve problems concerning ways to earn a customer's respect	Thinking	Problem Solving Reasoning	Draws conclusions from observations, evaluates condition and gives possible solution [4.4.5] Sees relationship between two or more ideas, objects or situations [4.5.5]
	12.7.2 Analyze problem situations with a plan of action to promote good customer relations	Thinking	Problem Solving	Devises and implements a plan of action to solve problems [4.4.3]

Unit 13: The VICA Student Organization

This unit should be integrated throughout the vocational course in which it is taught

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.1 (describe) The purpose of VICA		Foundation	Reading	Draws conclusions from what is read [1.3.12]
			Writing	Communicates thoughts, ideas, or facts in written form in a clear, concise manner [1.6.6]
		Personal Management	Organizational Effectiveness	Promotes the goals and values of the organization [3.3.8]
13.2 (delineate) A brief history of the VICA organization		Foundation	Reading	Comprehends written information and applies it to a task [1.3.8]
			Writing	Presents answers/conclusions in a clear and understandable form [1.6.13]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]
13.3 (identify) The types of VICA memberships		Foundation	Reading	Identifies relevant details, facts, and specifications [1.3.16]
			Writing	Summarizes written information [1.6.17]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.4 (recite) The VICA pledge		Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Interpersonal	Leadership	Conveys attitudes and values of group to others [2.4.3]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]
13.5 (explain) The VICA motto		Foundation	Reading	Draws conclusions from what is read [1.3.12]
			Writing	Summarizes written information [1.6.17]
		Personal Management	Organizational Effectiveness	Promotes the goals and values of the organization [3.3.8]
13.6 (state) The VICA creed		Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Interpersonal	Leadership	Conveys attitudes and values of group to others [2.4.3]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.7 (list) The VICA clothing requirements		Foundation	Reading	Comprehends written information and applies it to a task [1.3.8]
			Writing	Presents answers/conclusions in a clear and understandable form [1.6.13]
		Personal Management	Organizational Effectiveness	Identifies characteristics desired by organization [3.3.6]
13.8 (explain) The representation of the VICA colors		Foundation	Reading	Comprehends written information for main ideas [1.3.7]
			Writing	Communicates thoughts, ideas, or facts in written form in a clear, concise manner [1.6.6]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]
13.9 (identify) The offices of VICA		Foundation	Reading	Identifies relevant details, facts, and specifications [1.3.16]
			Writing	Summarizes written information [1.6.17]
		Interpersonal	Leadership	Comprehends ideas and concepts related to VICA offices [2.4.2]
		Personal Management	Organizational Effectiveness	Comprehends the organization's modes of operation [3.3.5]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.10 (delineate) The duties of each officer of VICA		Foundation	Reading	Comprehends written information for main ideas [1.3.7]
			Writing	Communicates thoughts, ideas, or facts in written form in a clear, concise manner [1.6.6]
		Interpersonal	Leadership	Comprehends ideas and concepts related to VICA offices [2.4.2]
		Personal Management	Organizational Effectiveness	Identifies characteristics desired by organization [3.3.6]
13.11 (list) The seven parts of the opening and closing ceremonies	13.11.1 Demonstrate each of the seven parts of the opening and closing ceremonies	Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Interpersonal	Leadership	Conveys attitudes and values of group to others [2.4.3]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]
		Thinking	Knowing How to Learn	Uses available resources to acquire new skills or improve skills [4.3.4]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.12 (recite) One part of the opening ceremony		Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Interpersonal	Leadership	Conveys attitudes and values of group to others [2.4.3]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]
13.13 (recite) One part of the closing ceremony		Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Interpersonal	Leadership	Conveys attitudes and values of group to others [2.4.3]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.14 (identify) The requirements for a club to legally conduct business	13.14.1 Demonstrate the procedures necessary to complete a business meeting, from call to order through adjournment, as outlined in a VICA USSO regulations guide	Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Interpersonal	Leadership	Conveys attitudes and values of group to others [2.4.3]
			Teamwork	Works effectively with others to reach a common goal [2.6.6]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]
		Thinking	Knowing How to Learn	Uses available resources to acquire new skills or improve skills [4.3.4]
13.15 (define) Parliamentary procedure		Foundation	Reading	Draws conclusions from what is read [1.3.12]
			Writing	Summarizes written information [1.6.17]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.16 (identify) The parts of a club business motion	13.16.1 Make a motion in a simulated club business meeting	Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Interpersonal	Leadership	Conveys attitudes and values of group to others [2.4.3]
			Teamwork	Works effectively with others to reach a common goal [2.6.6]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]
		Thinking	Knowing How to Learn	Uses available resources to acquire new skills or improve skills [4.3.4]
	13.16.2 Make an amendment to a motion during a simulated club business meeting	Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Interpersonal	Leadership	Conveys attitudes and values of group to others [2.4.3]
			Teamwork	Works effectively with others to reach a common goal [2.6.6]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]
		Thinking	Knowing How to Learn	Uses available resources to acquire new skills or improve skills [4.3.4]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.17 (identify) The four classifications of motions	13.17.1 Demonstrate the four classifications of motions within the context of a simulated club business meeting	Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Interpersonal	Leadership	Conveys attitudes and values of group to others [2.4.3]
			Teamwork	Works effectively with others to reach a common goal [2.6.6]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]
		Thinking	Knowing How to Learn	Uses available resources to acquire new skills or improve skills [4.3.4]
13.18 (identify) The equipment and materials needed for a VICA club business meeting as outlined by the USSO regulations guide		Foundation	Reading	Identifies relevant details, facts, and specifications [1.3.16]
			Writing	Presents answers/conclusions in a clear and understandable form [1.6.13]
		Personal Management	Organizational Effectiveness	Identifies characteristics desired by organization [3.3.6]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.19 (describe) The VICA professional development program		Foundation	Reading	Draws conclusions from what is read [1.3.12]
			Writing	Communicates thoughts, ideas, or facts in written form in a clear, concise manner [1.6.6]
		Interpersonal	Leadership	Comprehends ideas and concepts related to VICA professional development program [2.4.2]
13.20 (identify) The items in the VICA National Program of Work		Foundation	Reading	Identifies relevant details, facts, and specifications [1.3.16]
			Writing	Summarizes written information [1.6.17]
		Personal Management	Organizational Effectiveness	Comprehends the organization's modes of operation [3.3.5]
13.21 (list) Traits which an employer considers desirable in a worker		Foundation	Reading	Comprehends written information and applies it to a task [1.3.8]
			Writing	Presents answers/conclusions in a clear and understandable form [1.6.13]
		Personal Management	Integrity/Honesty/ Work Ethic	Describes desirable worker characteristics [3.2.3]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.22 (list) Traits which fellow workers consider desirable in a co-worker		Foundation	Reading	Identifies relevant details, facts, and specifications [1.3.16]
			Writing	Summarizes written information [1.6.17]
		Personal Management	Integrity/Honesty/ Work Ethic	Describes desirable worker characteristics [3.2.3]
13.23 (list) General safety rules which all employees should follow		Foundation	Reading	Identifies relevant details, facts, and specifications [1.3.16]
			Science	Follows safety guidelines [1.4.16]
		Personal Management	Integrity/Honesty/ Work Ethic	Follows established rules, regulations, and policies [3.2.5]
13.24 (identify) Sources of potential employment		Foundation	Reading	Draws conclusions from what is read [1.3.12]
			Writing	Summarizes written information [1.6.17]
		Personal Management	Career Awareness, Development, and Mobility	Explores career opportunities [3.1.6]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.25 (identify) Abbreviations used in job listings		Foundation	Reading	Identifies relevant details, facts, and specifications [1.3.16]
			Writing	Uses language, style, organization, and format appropriate to subject matter, purpose, and audience [1.6.19]
		Personal Management	Career Awareness, Development, and Mobility	Comprehends ideas and concepts related to job listings [3.1.3]
13.26 (describe) Items given as fringe benefits		Foundation	Reading	Comprehends written information for main ideas [1.3.7]
			Writing	Presents answers/conclusions in a clear and understandable form [1.6.13]
		Personal Management	Career Awareness, Development, and Mobility	Comprehends ideas and concepts related to fringe benefits [3.1.3]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.27 (state) The parts of a letter of application	13.27.1 Write a letter of application	Foundation	Reading	Applies information to new situations [1.3.5]
			Writing	Uses language, style, organization, and format appropriate to subject matter, purpose, and audience [1.6.19]
		Personal Management	Self-Esteem	Creates a positive self-image by selling self in a letter of application [3.5.2]
		Thinking	Knowing How to Learn	Processes new information as related to workplace [4.3.5]
13.28 (delineate) The elements of a standard resume	13.28.1 Write a resume	Foundation	Reading	Comprehends written information and applies it to a task [1.3.8]
			Writing	Uses language, style, organization, and format appropriate to subject matter, purpose, and audience [1.6.19]
		Personal Management	Self-Esteem	Develops self-confidence by creating a resumé which promotes personal strengths/abilities [3.5.5]
		Thinking	Knowing How to Learn	Processes new information as related to workplace [4.3.5]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.29 (state) The information normally requested on a job application	13.29.1 Complete a job application	Foundation	Reading	Determines what information is needed [1.3.10]
			Writing	Completes form accurately [1.6.7]
		Personal Management	Organizational Effectiveness	Applies knowledge to implement work-related system or practice [3.3.4]
		Thinking	Knowing How to Learn	Processes new information as related to workplace [4.3.5]
	13.29.2 Determine the discriminatory items on a job application	Foundation	Reading	Determines what information is needed [1.3.10]
		Personal Management	Career Awareness, Development, and Mobility	Comprehends ideas and concepts related to job applications [3.1.3]
		Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2]

VOCATIONAL and TECHNICAL SKILLS What the Student Should Be Able To Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	**Application**	**Skill Group**	**Skill**	**Description**
13.30 (explain) The parts of a job interview	13.30.1 Participate in a simulated job interview	Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]
		Interpersonal	Teamwork	Works effectively with others to reach a common goal [2.6.6]
		Personal Management	Organizational Effectiveness	Adapts to the organization's goals, values, culture, and traditional modes of operation [3.3.1]
		Thinking	Knowing How to Learn	Uses available resources to acquire new skills or improve skills [4.3.4]